



## Plant polyphenol oxidase homologs

**Description of Technology:** This invention is in the field of plant molecular biology. More specifically, this invention pertains to nucleic acid fragments encoding polyphenol oxidase enzymes in plants and seeds.

### Patent Listing:

1. **US Patent No. 6,680,185**, Issued January 20, 2004, "Plant polyphenol oxidase homologs"  
<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F6680185>

**Market Potential:** Polyphenol oxidase (PPO) catalyzes the oxidation of mono- and O-diphenols to O-diquinones. The oxidation of mono- and diphenols, which occurs during fruit ripening and plant wounding, produces an undesirable browning of fruit and vegetable material (Hunt M. D., et al. 1993, Plant Mol. Biol. 21(1):59-68). Inhibition of polyphenol oxidase activity would likely prevent the accumulation of the brown discoloration in fruits and may improve flavor. Furthermore, polyphenols function as antioxidants; inhibition of polyphenol oxidase would increase the level of polyphenols in fruits and vegetables and thus add food value.

There is a great deal of interest in identifying the genes that encode proteins involved in polyphenol oxidation in plants. These genes may be used in plant cells to control the oxidation of phenolic compounds that impart discoloration to fruit and vegetables. The genes may also be used to increase the level of antioxidants in fruits and vegetables. Accordingly, the availability of nucleic acid sequences encoding all or a portion of a PPO enzyme would facilitate studies to better understand polyphenol oxidation in plants and provide genetic tools to inhibit or otherwise alter PPO activity which in turn could provide mechanisms to control discoloration in fruits and vegetables and increase the pool of antioxidant compounds in plant cells.

### Benefits:

- Reduces discoloration of fruit and vegetables
- Increase the amount of antioxidants in fruits and vegetables

### Applications:

- Plant molecular biology

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